

REMARKS

Claim 1 has been amended to recite that the rubber component (A) contains a styrene-butadiene copolymer (C) having a weight average molecular weight of not less than 300,000. Support for amended Claim 1 can be found in, for example, the 300,000 lower limit recited in present Claim 3 and disclosed at page 4, lines 20-21 in the specification. Claim 5 has been amended to correct a typographical error. Entry of this amendment is respectfully requested. Claims 1-16 are pending.

Response to Double Patenting Rejections

(I) Claims 1-16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application No. 11/908,462 (published as U.S. Patent Application No. 2009/0054549). Applicants respectfully traverse.

Claim 1 of the '462 Application is directed to a rubber composition comprising 5 to 60 parts by mass of a low-molecular weight aromatic vinyl compound-conjugated diene compound copolymer (B) having (i) an aromatic vinyl compound content of 5 to 80% by mass, (ii) a vinyl bond content in a conjugated diene compound portion of 10 to 80% by mass, and (iii) a weight average molecular weight as measured through a gel permeation chromatography and converted to polystyrene of 5,000 to 200,000 and 20 to 90 parts by mass of a filler (C) based on 100 parts by mass of a rubber component (A) composed of at least one of natural rubber and synthetic diene-based rubbers, in which 50 to 90% by mass of the filler (C) is silica.

In contrast, present Claim 1 recites that the rubber component (A) contains a styrene-butadiene copolymer (C) having a weight average molecular weight of not less than 300,000.

Thus, Claims 1-9 of the copending '462 Application fail to render obvious the present claims.

Accordingly, withdrawal of the rejection is respectfully requested.

(II) Claims 1-16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 and 20 of copending Application No. 11/817,573 (published as U.S. Patent Application No. 2008/0289740). Applicants respectfully traverse.

Claim 1 of the copending '573 Application is directed to a rubber composition comprising 2 to 60 parts by mass of a low-molecular weight aromatic vinyl compound-conjugated diene compound copolymer (B) having (i) an aromatic vinyl compound content of 5 to 80% by mass, (ii) a vinyl bond content in a conjugated diene compound portion of 5 to 80% by mass, a weight average molecular weight as measured through a gel permeation chromatography and converted to polystyrene of 5,000 to 500,000 and at least one functional group based on 100 parts by mass of a rubber component (A) composed of at least one of natural rubber and synthetic diene-based rubbers.

However, the copending '573 claims fail to disclose that the rubber component (A) contains a styrene-butadiene copolymer (C) having a weight average molecular weight of not less than 300,000, as recited in present Claim 1, in addition to present copolymer (B).

Thus, Claims 1-14 and 20 of the copending '573 Application fail to render obvious present Claims 1-16. Accordingly, withdrawal of the rejection is respectfully requested.

Response to Claim Rejections Under § 103

I. Claims 1-12 and 15-16 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,959,039 to Yokoyama et al. Applicants respectfully traverse.

Yokoyama discloses a rubber composition comprising: (i) a high-molecular weight polymer component having a weight-average molecular weight of at least 30×10^4 and a bound styrene content of not greater than 30% by weight; and (ii) a low-molecular weight polymer component having a weight-average molecular weight of from 0.2×10^4 to 8×10^4 and a bound styrene content of not greater than 30% by weight. However, Yokoyama fails to disclose or suggest a low-molecular weight polymer having a weight average molecular weight of more than 50,000 but not more than 300,000 comprising a vinyl bond content in diene compound portion of 10-80 mass% and 5-80 mass% of the aromatic vinyl compound, as presently claimed. In this regard, Applicants direct the Examiner's attention to Yokoyama's Table 1, wherein polymers having a weight-average molecular weight of 60×10^3 (E6) or 90×10^3 (C2) have a bound styrene content of 0%, i.e., polybutadienes.

Thus, one skilled in the art would not have conceived of the presently claimed aromatic vinyl compound-diene compound copolymer (B) given Yokoyama's disclosure. Accordingly, Yokoyama fails to render obvious the present claims. Withdrawal of the rejection is respectfully requested.

II. Claims 3-16 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Yokoyama in view of U.S. Patent No. 6,376,593 to Sasaka et al. Applicants respectfully traverse.

Sasaka discloses a rubber composition comprising: (i) low-molecular weight butadiene rubber (BR) having a weight-average molecular weight (Mw) of 5,000 to 80,000; (ii) a styrene-butadiene rubber (SBR); and (iii) silica. However, Sasaka fails to disclose or suggest a low-molecular weight polymer comprising an aromatic vinyl compound, as presently claimed.

Thus, none of Yokoyama or Sasaka, either alone or in combination, disclose or suggests the presently claimed rubber composition comprising 5-60 parts by mass of an aromatic vinyl compound-diene compound copolymer (B) having a weight average molecular weight of more than 50,000 but not more than 300,000 (conversion to polystyrene through gel permeation chromatography) based on 100 parts by mass of a rubber component (A) comprising at least one rubber of natural rubber and synthetic diene-based rubbers in which the copolymer (B) comprises 5-80 mass% of the aromatic vinyl compound and a vinyl bond content in diene compound portion is 10-80 mass%.

Accordingly, Yokoyama and Sasaka fails to render obvious the present claims. Withdrawal of the rejection is respectfully requested.

III. Claims 1-11 and 13-16 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,679,744 to Kawauzra et al. Applicants respectfully traverse.

Kawauzra discloses a rubber composition comprising: (i) natural rubber and/or polyisoprene rubber; (ii) styrene-butadiene copolymer rubber and/or polybutadiene rubber; and (iii) an A-B type block copolymer. More particularly, as shown in Kawauzra's Table II-1, Kawauzra discloses a block copolymer having a weight average molecular weight of 85,000. However, the Kawauzra does not disclose or suggest a styrene-butadiene copolymer (C) having a weight average molecular weight of not less than 300,000.

Moreover, according to the present invention, the high storage modulus (high G') and the low loss factor (low $\tan \delta$) can be established without damaging the operability of the rubber composition. One of ordinary skill in the art would not expect these results from the composition of Kawauzra.

Thus, Kawauzra fails to render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

IV. Claims 4-12 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kawauzra in view of Yokoyama. Applicants respectfully traverse.

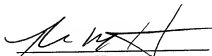
Yokoyama and Kawauzra fail to disclose or suggest the claimed invention for the reasons given above. Further, Yokoyama and Kawauzra fail to disclose or suggest the results obtained from the presently claimed invention, i.e., the high storage modulus (high G') and the low loss factor (low $\tan \delta$).

Accordingly, withdrawal of the rejection is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Thomas M. Hunter
Registration No. 64,676

SUGHRUE MION, PLLC
Telephone: (202) 293-7060

Facsimile: (202) 293-7860

WASHINGTON OFFICE

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